

REMARKS

The Office Action and prior art relied upon have been carefully considered.

The title of the invention and the drawings have been amended according to the Examiner's suggestion.

The Examiner's indicated allowability of claims 4-7 is noted with appreciation. In order to expedite the prosecution, Applicants have cancelled claims 3, 8 and 9 and amended claims 1 and 10. Claims 1 and 10 as well as claims 2, 4-7 have been amended to overcome the rejection under 35 USC 112.

Claims 1-3, and 10 stand rejected under 35 USC103(a) as being unpatentable over Redlich ('174) in view of Takahashi et al. ('298), and claims 8 and 9 stand rejected under 35 USC 103(a) as being unpatentable over Redlich ('174) in view of Takahashi et al. ('298), and further in view of Morita et al. ('951).

Each of amended claims 1 and 10 includes limitations of the cancelled claim 3 and further features, i.e.

said multiple of thin plates of said inner yoke being of the same shape and the same dimension and said inner yoke being formed such that a radius of an outer surface of said inner yoke with respect to said central axis is smaller than a radius of an inner surface of said movable unit by a predetermined length, and said multiple of thin plates of said outer yoke being of the same shape and the same dimension and said outer yoke being formed such that a radius of an inner surface of said outer yoke with respect to said central axis is greater than a radius of an outer surface of said movable unit by a predetermined length.

Amended claims 1 and 10 are directed to the embodiments of Figs. 4 to 11 and 13. More specifically, according to the present invention, now defined by amended claims 1 or 10, plural thin plates each having the same shape and the same dimension are laminated to form a block of an outer yoke, where the inner surface of the block of the

outer yoke is curved along the cylindrical movable unit so that the inner surface is spaced from the outer surface of the movable unit by a predetermined distance. Similarly, plural thin plates each having the same shape and the same dimension are laminated to form a block of an inner yoke, where the outer surface of the block of the inner yoke is curved along the cylindrical movable unit so that the outer surface is spaced from the inner surface of the movable unit by a predetermined distance.

EXHIBIT A shows one block of the outer yoke with a coil, EXHIBIT B shows a state where two blocks of the inner yoke are combined in a symmetrical manner, and EXHIBIT C shows the movable unit permanent magnets for a better understanding of the structure of the present invention.

None of the cited references discloses or suggests such an arrangement defined by amended claim 1 or 10. More specifically, in the arrangement of Redlich, the shape and size of the plural thin plates laminated to form an inner yoke are not the same as shown in Figs. 5 and 6. Takahashi et al. do not disclose curved surfaces of the inner yoke or the outer yoke. Although curved surface of a block of an outer yoke is disclosed by Morita et al., the direction of laminating plural thin plates varies depending on the block, and is not parallel to X-axis or Y-axis.

Since none of the prior art references discloses the features now recited in amended claims 1 and 10, it is believed that the present invention defined by these claims is patentably distinguishable over the prior art.

Original claims 4 to 7 were objected to, and therefore, new claims 11 to 14 have been added to present claims which correspond to original claims 4 to 7 written in independent form to include all the limitations of base claim(s).

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

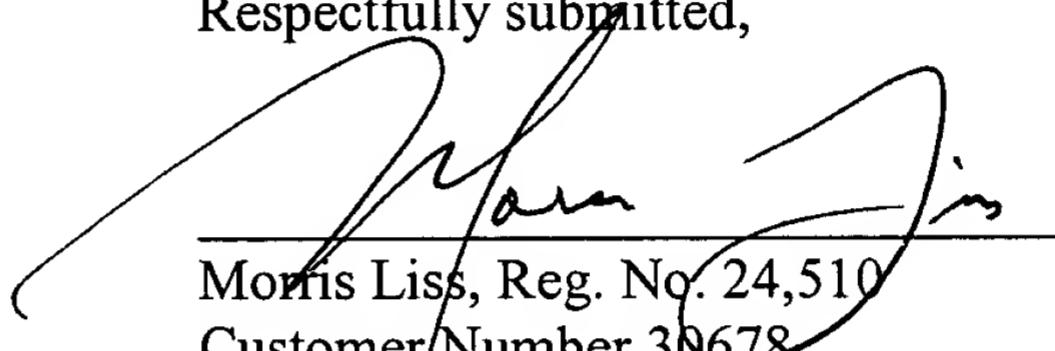
In view of the above, consideration and allowance are, therefore, respectfully solicited.

In the event the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number noted below.

The Commissioner is hereby authorized to charge any fees, or credit any overpayment, associated with this communication, including any extension fees, to CBLH Deposit Account No. 22-0185.

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Respectfully submitted,


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**VERSION WITH MARKINGS TO SHOW CHANGES MADE****IN THE CLAIMS:**

Please cancel claims 3, 8 and 9 without prejudice and amend claims 1, 2, 4-6, and 10 and add new claims 11-14 as follows:

1. (Amended) A linear motor, comprising a movable unit in cylindrical shape having its central axis at the intersection of an X-axis and Y-axis, an inner yoke arranged [on] at the inner side of the movable unit with a given spacing in the radial direction of the movable unit between said inner yoke and said movable unit, and being formed by laminating a multiple of thin plates each in approximately rectangular shape and having [high] strong magnetic permeability in parallel to one of the X-axis or Y-axis, an outer yoke arranged [on] at the outer side of the movable unit with a given spacing in a radial direction of the movable unit between said outer yoke and said movable unit, being formed by laminating a multiple of thin plates each in approximately rectangular shape and having [high] strong magnetic permeability arranged in the same direction as the thin plates of the inner yoke, and forming a first magnetic pole, a second magnetic pole, and a third magnetic pole [by arranging] defined by two slots which are cut out in the laminating direction of the thin plates, a coil wound on the second magnetic pole of the outer yoke and for forming alternately different magnetic poles at the first magnetic pole, the second magnetic pole, and the third magnetic pole, a base for retaining the inner yoke and the outer yoke, bearings mounted on the base to be positioned at the center of X-axis and Y-axis, a pair of permanent magnets magnetized in a direction to [connect] magnetically couple the inner yoke with the outer yoke and arranged on the movable unit to be retained in a gap between the inner yoke and the outer yoke with a given spacing in parallel to the central axis so that directions of magnetization are opposite to each other, and a shaft integrated with the movable unit and pivotally supported on the bearings, said multiple of thin plates of said inner yoke being of the same shape and the same dimension and said inner yoke being formed such that a radius of an outer surface of said inner yoke with respect to said central axis is smaller than a radius of an inner surface of said

movable unit by a predetermined length, and said multiple of thin plates of said outer yoke being of the same shape and the same dimension and said outer yoke being formed such that a radius of an inner surface of said outer yoke with respect to said central axis is greater than a radius of an outer surface of said movable unit by a predetermined length.

2. (Amended) A linear motor according to claim 1, wherein [a] said pair of permanent magnets are magnetized in the radial direction around the central axis [are arranged with a given spacing in parallel to the central axis so that directions of magnetization are opposite to each other, and said magnets being retained in a gap between the inner yoke and the outer yoke].
4. (Amended) A linear motor according to claim 1 or 2, wherein a radius of curvature of an inner periphery of the outer yoke is equal to a radius of curvature of an inner periphery of the slot, and a radius of curvature of an outer periphery of the outer yoke is equal to a radius of curvature of an outer periphery of the slot, and the radius of curvature of the outer periphery of the outer yoke or the slot is greater than the radius of curvature of the inner periphery of the outer yoke or the slot.
5. (Amended) A linear motor according to claim 2, wherein an outer peripheral end of each of the outermost sides in the laminating direction of the thin plates of the inner yoke and an end surface of the permanent magnet are on a line, which connects an inner peripheral end of each of the outermost sides in the laminating direction of the thin plates of the outer yoke with the intersection of the X-axis and the Y-axis.
6. (Amended) A linear motor according to claim 1 or 2, wherein two of said inner [yokes] yoke are arranged symmetrically with respect to Y-axis, and [the] two of said inner [yokes] yoke are integrated by two inner yoke support members disposed inside the inner [yoke] yokes and positioned separately in a direction of the Y-axis.

10. (Amended) A linear compressor, comprising a movable unit in cylindrical shape having its central axis at the intersection of an X-axis and Y-axis, an inner yoke arranged [on] at the inner side of the movable unit with a given spacing in the radial direction of the movable unit between said inner yoke and said movable unit, and being formed by laminating a multiple of thin plates each in approximately rectangular shape and having [high] strong magnetic permeability in parallel to one of the X-axis or Y-axis, an outer yoke arranged [on] at the outer side of the movable unit with a given spacing in a radial direction of the movable unit between said outer yoke and said movable unit, being formed by laminating a multiple of thin plates each in approximately rectangular shape and having [high] strong magnetic permeability arranged in the same direction as the thin plates of the inner yoke, and forming a first magnetic pole, a second magnetic pole, and a third magnetic pole [by arranging] defined by two slots which are cut out in the laminating direction of the thin plates, a coil wound on the second magnetic pole of the outer yoke and for forming alternately different magnetic poles at the first magnetic pole, the second magnetic pole, and the third magnetic pole, a base for retaining the inner yoke and the outer yoke, bearings mounted on the base to be positioned at the center of X-axis and Y-axis, a pair of permanent magnets magnetized in a direction to [connect] magnetically couple the inner yoke with the outer yoke and arranged on the movable unit to be retained in a gap between the inner yoke and the outer yoke with a given spacing in parallel to the central axis so that directions of magnetization are opposite to each other, and a shaft integrated with the movable unit and pivotally supported on the bearings, said multiple of thin plates of said inner yoke being of the same shape and the same dimension and said inner yoke being formed such that a radius of an outer surface of said inner yoke with respect to said central axis is smaller than a radius of an inner surface of said movable unit by a predetermined length, and said multiple of thin plates of said outer yoke being of the same shape and the same dimension and said outer yoke being formed such that a radius of an inner surface of said outer yoke with respect to said central axis is greater than a radius of an outer surface of said movable unit by a predetermined length, a piston mounted at a forward end of a shaft integrated with the movable unit and placed in the cylinder, and a spring mounted on the shaft.



EXHIBIT A

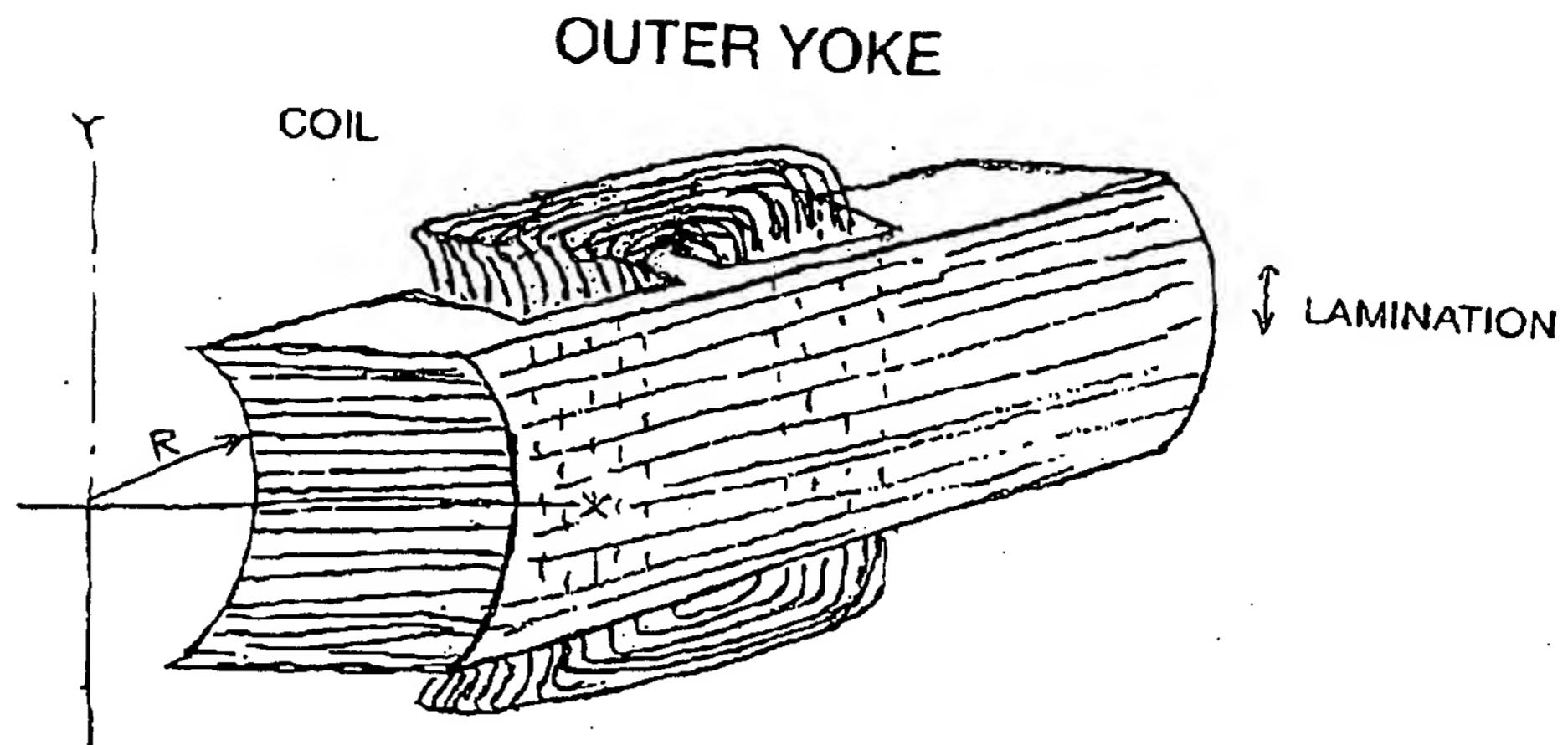


EXHIBIT B

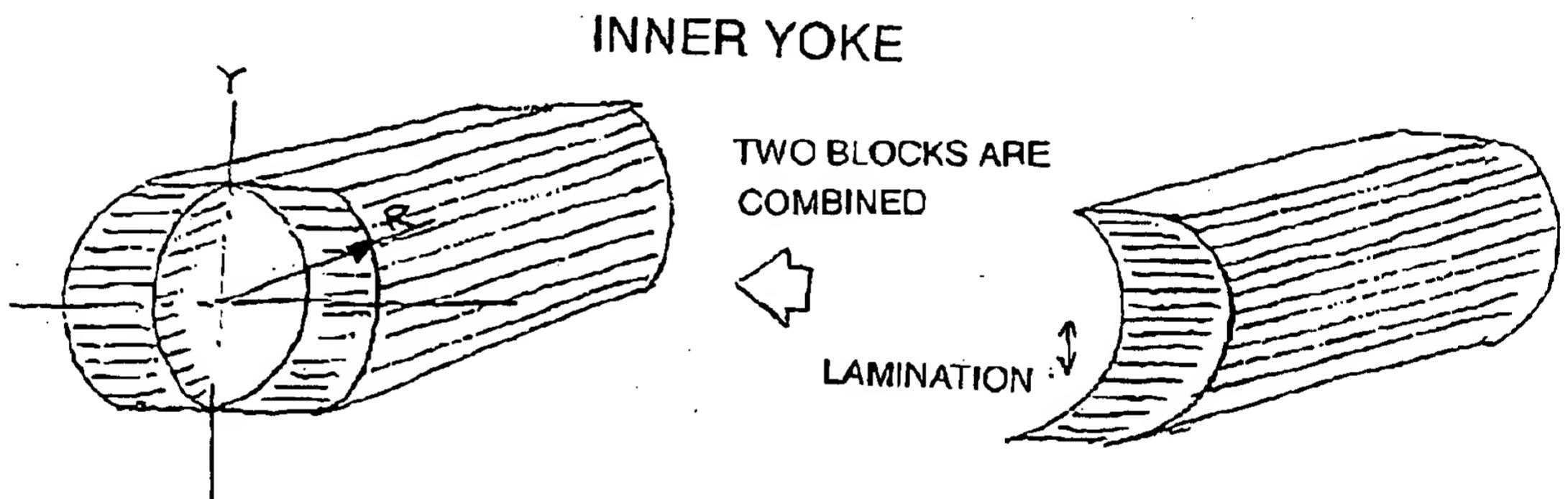


EXHIBIT C

MOVABLE UNIT

